

What is claimed is:

1. An electromagnetic sound generator comprising:
  - a cup-shaped yoke;
  - a spool on which a coil is wound, said spool
  - 5 having a hole through its central portion and being installed so as to contact the inner surface of said yoke;
  - a spring having an edge that is secured to the edge of the open end of said yoke;
  - 10 a core that is constituted by a cylindrical main body part and a plate part that is formed on the lower side of said main body part, said main body part being inserted inside said hole through said spool and being movable up and down inside said hole, the lower
  - 15 surface of said plate part being secured to the central portion of said spring, and said core being movable up and down as a unit with the central portion of said spring; and
  - a back plate that limits displacement in the
  - 20 direction of the lower surface of said core;
  - wherein attractive force causes said core to strike said yoke when current is conducted to said coil, and resilience of said spring causes said core to strike said back plate when current is cut off; thereby
  - 25 producing sound.

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2. An electromagnetic sound generator according to claim 1, wherein said core has a projection for offsetting on its lower surface; whereby, when said spring is secured to the lower surface of said core and the edge of said back plate is secured to the edge of said spring and/or to the edge of said yoke; said spring is pushed upward due to the contact of said projection for offsetting of said core that passes through said spring and against said back plate, thereby providing said spring with pretension.

3. An electromagnetic sound generator according to claim 1, further comprising coil terminals that are secured to said spool on which a coil is wound and that extend from the edges of said yoke and away from said yoke and that serve the additional purpose of legs for self support.

4. An electromagnetic sound generator according to claim 1, wherein slits are provided on the upper surface of said yoke, said slits being any of: a single linear slit, a plurality of intersecting slits, and a plurality of slits that extend from the central portion toward the outer circumference.

5. An electromagnetic sound generator according

to claim 1, wherein a beam-like part, and lead-like parts that extend in both directions away from said beam-like part are provided in the upper surface of said yoke.

5           6.    An electromagnetic sound generator according to claim 1, wherein one or more vertical slits are provided in the side surfaces of said yoke.

10           7.    An electromagnetic sound generator according to claim 1, wherein said yoke is fabricated from plate by press working or deep drawing and is formed as either a cylinder or a polyhedron having quadrilateral side surfaces.

15           8.    An electromagnetic sound generator according to claim 1, wherein said sound generator is used for generating a sound like an operation sound of a relay-type directional indicator of an automobile.

20           9.    An electromagnetic sound generator according to claim 1, wherein: said spool, which is integrated with said coil terminals by press-fitting or bonding, is inserted into said yoke; following which said core, said spring, and said back plate, which have been processed to  
25   include notches or holes so as not to contact said coil terminals that protrude from said yoke, are inserted in

the same direction into said yoke, and said back plate is welded to the edges of said yoke by a process such as resistance welding or laser welding.

5           10. An electromagnetic sound generator,  
comprising:

          a cup-shaped yoke;

          a spool on which a coil is wound, that has a  
hole through its central portion, and that is installed  
10   so as to contact the inner surface of said yoke;

          a spring having an edge that is secured to the  
edge of the open end of said yoke and having at least one  
protrusion that protrudes from the edge toward the  
central portion; and

15           a core that is constituted by a cylindrical  
main body part and a plate part that is formed on the  
lower side of said main body part, that is inserted  
inside said hole through said spool and that is movable  
up and down inside said hole, the lower surface of said  
20   plate part being secured to the central portion of said  
spring, said core being movable up and down as a unit  
with the central portion of said spring; and displacement  
of said core in the direction of its lower surface being  
limited by said protrusion of said spring;

25           wherein attractive force causes said core to  
strike said yoke when current is conducted to said coil,

and resilience of said spring causes said core to strike said protrusion of said spring when current is cut off; thereby producing sound.

5           11. An electromagnetic sound generator according to claim 10, further comprising coil terminals that are secured to said spool on which a coil is wound and that extend from the edges of said yoke away from said yoke and that serve the additional role of legs for self  
10 support.

12. An electromagnetic sound generator according to claim 10, wherein slits are provided on the upper surface of said yoke, said slits being any of: a single  
15 linear slit, a plurality of intersecting slits, and a plurality of slits that extend from the central portion and toward the outer circumference.

13. An electromagnetic sound generator according  
20 to claim 10, wherein a beam-like part, and lead-like parts that extend in both directions away from said beam-like part are provided in the upper surface of said yoke.

14. An electromagnetic sound generator according  
25 to claim 10, wherein one or more vertical slits are provided in the side surfaces of said yoke.

15. An electromagnetic sound generator according to claim 10, wherein said yoke is fabricated from plate by press working or deep drawing and is formed as either  
5 a cylinder or a polyhedron having quadrilateral side surfaces.

16. An electromagnetic sound generator according to claim 10, wherein said sound generator is used for  
10 generating a sound like an operation sound of a relay-type directional indicator of an automobile.

17. An electromagnetic sound generator according to claim 10, wherein: said spool, which is integrated  
15 with said coil terminals by press-fitting or bonding, is inserted into said yoke; following which said spring and said core, which have been processed to have notches or holes so as not to contact said coil terminals that  
20 protrude from said yoke, are inserted in the same direction into said yoke, and said spring is welded to the edges of said yoke by a process such as resistance welding or laser welding.